Installing E1 Link Modules in BN Platforms

Part No. 114943-A Rev. A
January 1997

Bay Networks

Bay Networks

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EN 55 022 (CISPR 22:1985), Class A <and Class B>
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Canada Requirements Only

Canada CS-03 Rules and Regulations

Note: The Canadian Department of Communications label identifies certified equipment. The certification means that the equipment meets certain telecommunications network protective operations and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent the degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Canada CS-03 -- Règles et règlements

Note: L’étiquette du ministère des Communications du Canada indique que l’appareillage est certifié, c’est-à-dire qu’il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l’appareillage fonctionnera à la satisfaction de l’utilisateur.

Avant d’installer l’appareillage, s’assurer qu’il peut être branché aux installations du service de télécommunications local. L’appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d’un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu’une telle installation n’assure pas un service parfait en tout temps.

Les réparations de l’appareillage certifié devraient être confiées à un service d’entretien canadien désigné par le fournisseur. En cas de réparation ou de modification effectuées par l’utilisateur ou de mauvais fonctionnement de l’appareillage, le service de télécommunications peut demander le débranchment de l’appareillage.

Pour leur propre sécurité, les utilisateurs devraient s’assurer que les mises à la terre des lignes de distribution d’électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Canada Requirements Only *(continued)*

D. O. C. Explanatory Notes: Equipment Attachment Limitations

The Canadian Department of Communications label identifies certified equipment. This certification meets certain telecommunication network protective, operational and safety requirements. The department does not guarantee the equipment will operate to the users satisfaction.

Before installing the equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above condition may not prevent degradation of service in some situations.

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Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

Notes explicatives du ministère des Communications: limites visant les accessoires

L'étiquette du ministère des Communications du Canada indique que l'appareillage est certifié, c'est-à-dire qu'il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l'appareillage fonctionnera à la satisfaction de l'utilisateur.

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Canada Requirements Only *(continued)*

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Cet appareil numérique (Access Feeder Node, Access Link Node, Access Node, Access Stack Node, Backbone Concentrator Node, Backbone Concentrator Node Switch, Backbone Link Node, Backbone Link Node Switch, Concentrator Node, Feeder Node, Link Node) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Réglement sur le brouillage radioélectrique du ministère des Communications du Canada.

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About This Guide

Read this guide if you are responsible for installing a Bay Networks™ Dual E1, Single-, or Dual-Port Multichannel E1 (MCE1) link module in these Backbone Node (BN®) platforms:

- Backbone Link Node (BLN®)
- Backbone Link Node-2 (BLN-2)
- Backbone Concentrator Node (BCN®)

This guide describes how to

- Prepare for installation and configure the link module jumpers if necessary
- Install the link module
- Interpret the LEDs on the link module

Appendix A describes cabling requirements and Appendix B, European operating standards.

Note: Experienced network operators can safely perform the user-serviceable procedures described in this book; however, only authorized Bay Networks service technicians can perform other maintenance procedures not described in this book.

Conventions

bold text	Indicates text that you need to enter and command names in text. Example: Use the **dinfo** command.
italic text	Indicates variable values in command syntax descriptions, new terms, file and directory names, and book titles.
quotation marks (“ ”)	Indicate the title of a chapter or section within a book.

Acronyms

ILI	Intelligent Link Interface
LED	light-emitting diode
MCE1	Multichannel E1
SELV	safety extra-low voltage
TNV	telecommunications network voltage

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Sydney, Australia	(612) 9927-8800	(612) 9927-8811
Tokyo, Japan	(81) 3-5402-0180	(81) 3-5402-0173

Chapter 1
Preparing for Installation

Note: In this guide, the term E1 includes E1 and MCE1 link modules, except when it is necessary to identify specific models.

Depending on your configuration, complete these preliminary tasks as needed to install the E1 link module:

- Choose a slot
- Remove a link module
- Configure jumper settings

Choosing a Slot

You can install the E1 link module in

- Slots 2 through 5 in the BLN platform (Figure 1-1)
- Slots 2 through 5 in the BLN-2 platform (Figure 1-2)
- Slots 1 through 6 and Slots 8 through 14 in the BCN platform (Figure 1-3)

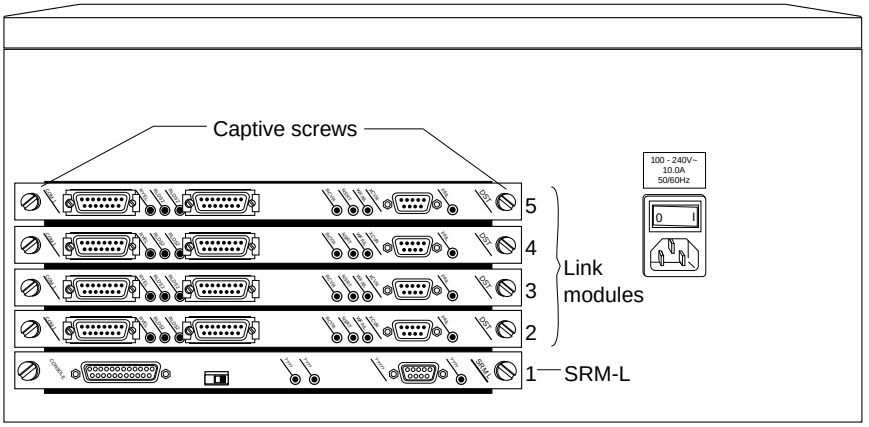


Figure 1-1. Link Module Slots in a BLN Platform

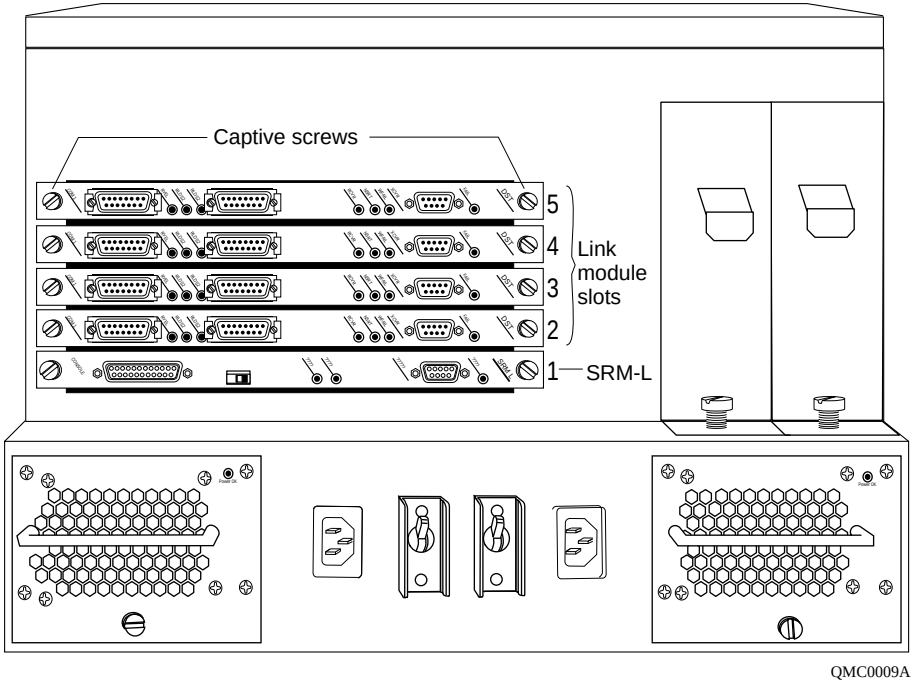


Figure 1-2. Link Module Slots in a BLN-2 Platform

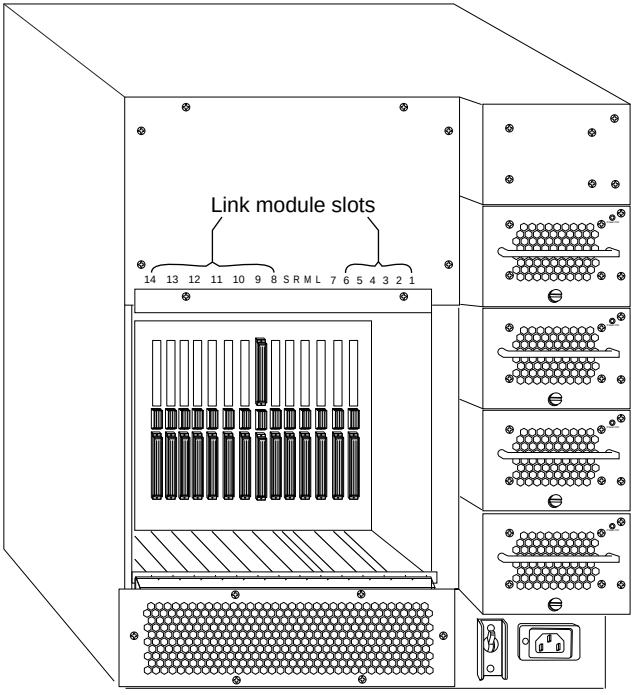


Figure 1-3. Link Module Slots in a BCN Platform

Removing a Link Module

If there are no empty slots in your BN platform, you must remove a link module to install the E1. When replacing a configured link module, you must delete all configured circuits (ports) from the slot so that the BN platform software can properly configure the new link module.

Refer to *Configuring Routers* if you use router software or *Administration Guide* if you use BayStream software for instructions on editing a configuration file and deleting circuits.

The Backbone Node hot-swap feature allows you to remove or replace a link module with the chassis power on or off.

Danger: Do not remove more than two adjacent modules with the power on.

When you remove a link module with the power on, the services that slot provides become disrupted. After the slot fails to receive packets, the other link modules in the chassis resynchronize their routing tables and continue uninterrupted.

The procedure for removing a link module is the same for the BLN, BLN-2, and BCN platforms:

1. **Disconnect any exterior cables from the link module.**
2. **Attach an antistatic wrist strap.**

   BN platforms and link modules ship with an antistatic wrist strap. You must wear one of these straps when accessing components on BN platforms. The antistatic wrist strap directs the discharge of static electricity from your body to the chassis, thereby avoiding discharge and possible damage to sensitive electronic components.

Caution: Electrostatic discharge can damage hardware. Always use the antistatic wrist strap when handling any component on your BN platform.

3. **Loosen the captive screw on each end of the module.**
4. **Grasp the sides of the module and pull it out of the slot.**
5. **Place the module in an antistatic protective bag.**

Configuring Jumper Settings

The following E1 link modules contain at least one user-configurable jumper setting:

- Dual E1 (Order No. 5250)
- Single-Port MCE1 (MCE1-1, Order No. 77009)
- Dual-Port MCE1 (MCE1-2, Order No. 77007)

Before you install an E1 link module, make sure the jumper settings on the link module match your configuration. The following sections describe only the user-configurable jumper settings; changing the settings of any other jumpers on the link module can jeopardize module functioning.

Setting Jumpers on the Dual E1 Link Module

Figure 1-4 shows the user-configurable jumper on the Dual E1 link module (Order No. 5250).

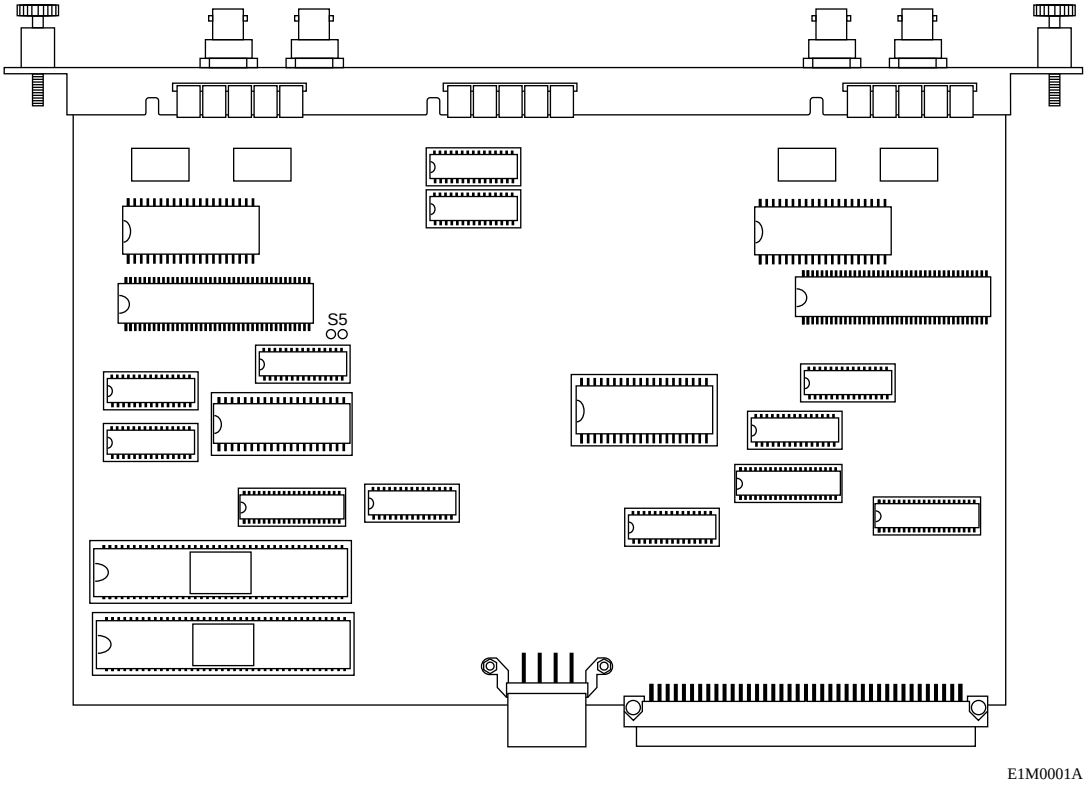


Figure 1-4. Jumper on the Dual E1 Link Module

Before installing the Dual E1 link module, refer to Table 1-1 to ensure that the user-configurable jumper setting on the link module matches your configuration.

Table 1-1. Dual E1 Link Module Jumper Settings

Option	Setting	Jumper
Internal clock	Enabled	S5
	Disabled	S5

Setting Jumpers on the Single-Port MCE1 Link Module

Note: For United States installations, the 75-ohm Single-Port MCE1 link module (Order No. AG2111004) and the 120-ohm Single-Port MCE1 link module (Order No. AG2111002) do not contain user-configurable jumpers or switches. For European installations, refer to Appendix B for user-configurable settings on the 75-ohm Single-Port MCE1 link module.

Figure 1-5 shows the user-configurable jumpers on the Single-Port MCE1 (MCE1-1) link module (Order No. 77009).

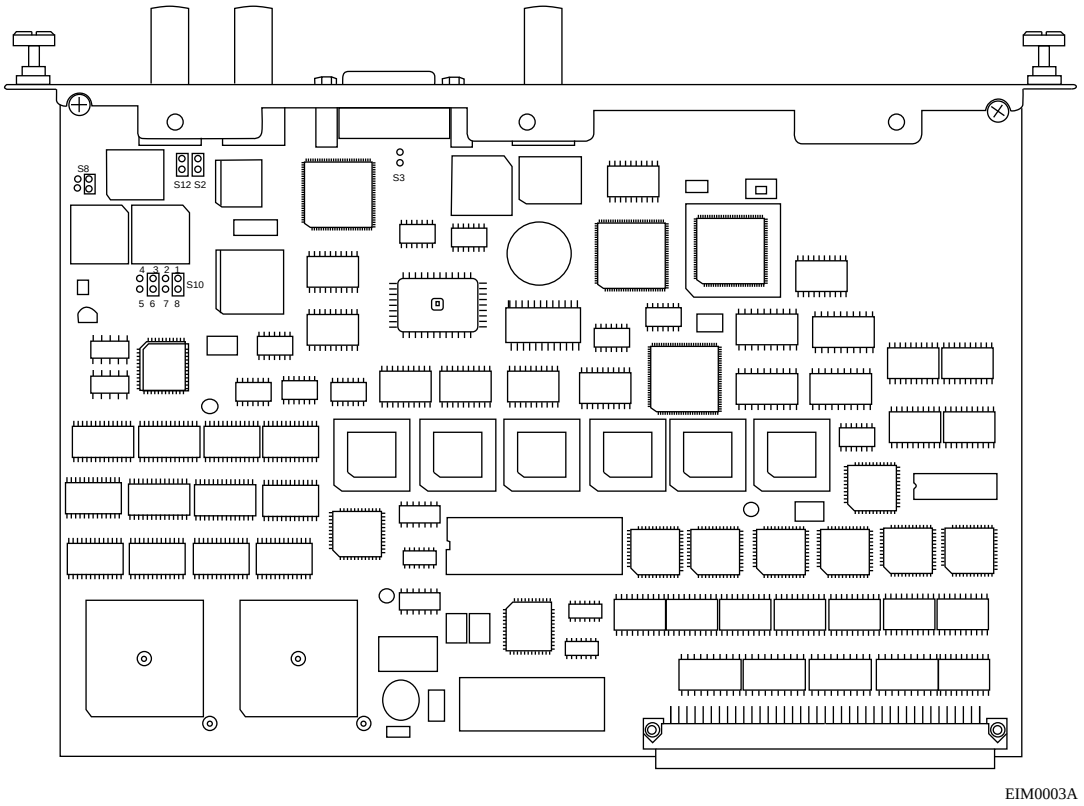


Figure 1-5. Jumpers on the Single-Port MCE1 Link Module

Before installing the MCE1-1 link module, refer to Table 1-2 to ensure that the user-configurable jumper settings on the link module match your configuration.

Table 1-2. MCE1-1 Link Module Jumper Settings

Option	Setting	Jumper
Transmit Data Ground Reference	75Ω (default)	S12
	120Ω	S12
Receive Data Ground Reference	75Ω (default)	S2
	120Ω	S2
120Ω Cable Shield	75Ω (unbalanced)	S3
	120Ω (balanced)	S3
Transformer Turns Ratio	75Ω (default)	S8 1 2
	120Ω	S8 1 2
Resistor Settings	75Ω (default)	4 5 1 8 S10
	120Ω	4 5 1 8 S10

Setting Jumpers on the Dual-Port MCE1 Link Module

Note: For United States installations, the 75-ohm Dual-Port MCE1 link module (Order No. AG2111003) and the 120-ohm Dual-Port MCE1 link module (Order No. AG2111001) do not contain user-configurable jumpers or switches. For European installations, refer to Appendix B for user-configurable settings on the 75-ohm Dual-Port MCE1 link module.

Figure 1-6 shows the user-configurable jumpers on the Dual-Port MCE1 (MCE1-2) link module (Order No. 77007).

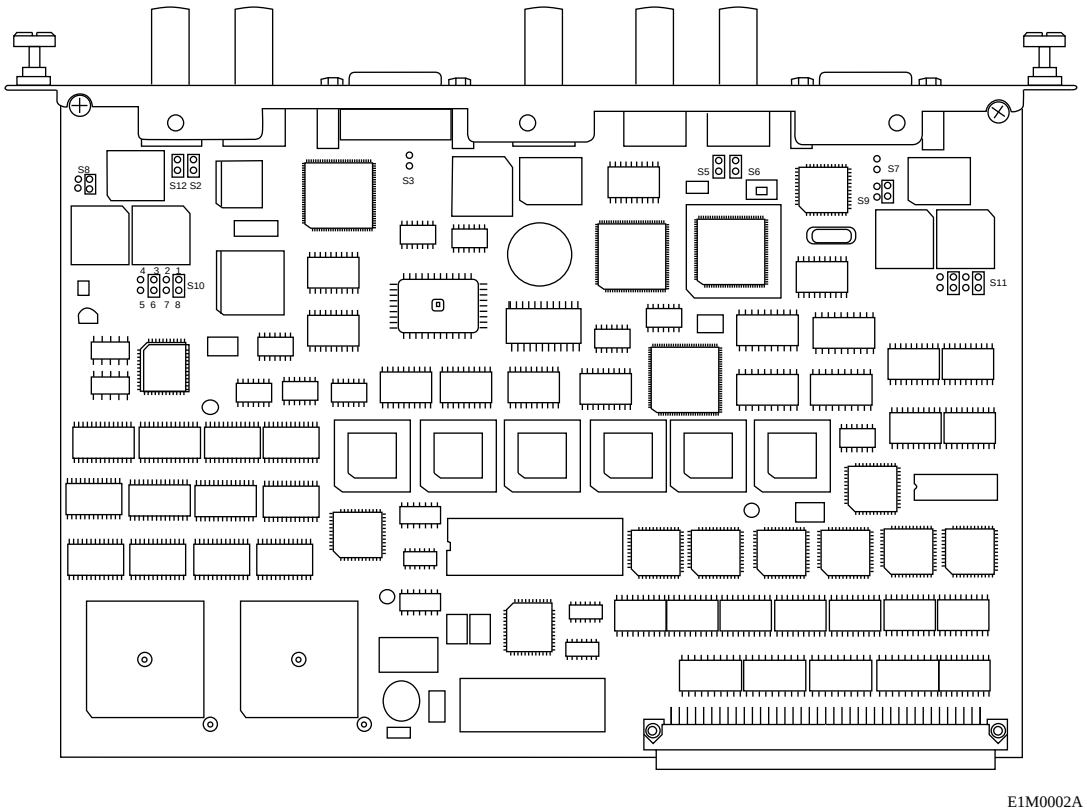


Figure 1-6. Jumpers on the Dual-Port MCE1 Link Module

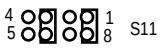
Before installing the MCE1-2 link module, refer to Table 1-3 to ensure that the user-configurable jumper settings on the link module match your configuration.

Table 1-3. MCE1-2 Link Module Jumper Settings

Option	Setting	Jumper
Transmit Data Ground Reference (COM 1)	75Ω (default)	
	120Ω	
Receive Data Ground Reference (COM 1)	75Ω (default)	
	120Ω	
120Ω Cable Shield (COM 1)	75Ω (unbalanced)	
	120Ω (balanced)	
Transformer Turns Ratio (COM 1)	75Ω (default)	
	120Ω	
Resistor Settings (COM 1)	75Ω (default)	
	120Ω	

(continued)

Table 1-3. MCE1-2 Link Module Jumper Settings *(continued)*

Option	Setting	Jumper
120 Ohm Cable Shield (COM 2)	75Ω (unbalanced)	
	120Ω (balanced)	
Transmit Data Ground Reference (COM 2)	75Ω (default)	
	120Ω	
Receive Data Ground Reference (COM 2)	75Ω (default)	
	120Ω	
Transformer Turns Ratio (COM 2)	75Ω (default)	
	120Ω	
Resistor Settings (COM 2)	75Ω (default)	
	120Ω	

Chapter 2
Installing the Link Module

Complete the steps in this chapter to install the E1 link module in your BLN, BLN-2, or BCN platform.

Inserting the Link Module

Install the link module in the BLN, BLN-2, or BCN platform as follows:

1. **Attach an antistatic wrist strap.**

   BN platforms and link modules ship with an antistatic wrist strap. You must wear one of these straps whenever you access components in a platform.

   The antistatic wrist strap directs the discharge of static electricity from your body to the chassis, thereby avoiding discharge and possible damage to sensitive electronic components.

Caution: Electrostatic discharge can damage hardware. Always use the antistatic wrist strap when handling any router components.

2. **Using the slot card guides, slide the module into the appropriate slot until the module's connector panel touches the BN platform's back panel.**

   Refer to Figure 1-1 (BLN), 1-2 (BLN-2), or 1-3 (BCN) for slot locations.

3. **Secure the captive screw on each end of the module (Figure 2-1).**

   Figure 2-1 shows the captive screws on a Dual-Port MCE1 link module; these screws are the same on all link modules.

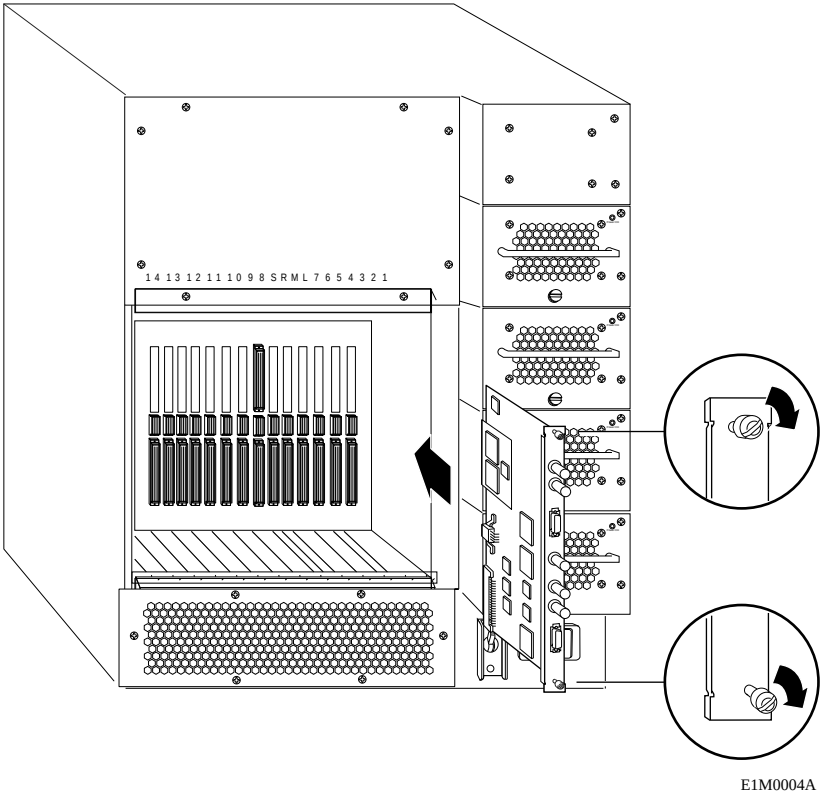


Figure 2-1. Link Module Captive Screws (BCN Example)

4. **Once you are done accessing the interior of the chassis, remove the antistatic wrist strap.**

Connecting Cables

Connect the necessary cables to the link module ports.

Refer to the cable guide for information about the cables Bay Networks supports for link modules.

Chapter 3
Checking Status Indicators

This chapter describes the status indicator lights (LEDs) on the Dual E1 link module, and on the Single- and Dual-Port MCE1 link modules. Use the LEDs to verify that the link module is operating after installation.

Note: We recommend that you issue the Bay Networks Technician Interface **diags** command to the associated slot immediately after you insert a link module. (Refer to *Using Technician Interface Software* if you use router software or *Troubleshooting and Testing* if you use BayStream software.) Otherwise, the link module FAIL LED will remain lit, indicating that diagnostics have not run on the Intelligent Link Interface (ILI). However, even if you do not issue the **diags** command, the link module initializes and becomes operational as long as the board functions properly and contains the correct interface configurations.

Dual-Port E1 LEDs

Figure 3-1 shows the LEDs on the Dual E1 link module, and Table 3-1 describes those LED functions.

E1M0005A

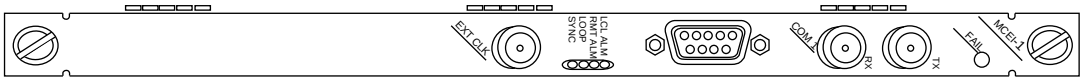
Figure 3-1. Dual E1 LEDs

Table 3-1. Functions of the Dual E1 LEDs

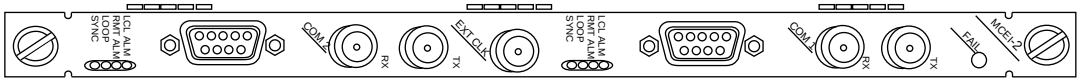
LED	Function
RLOS (Receiver Frame Loss)	Indicates when the module receives a signal with at least two framing errors for every four frames.
RSIG (Receiver Signal Loss)	Indicates a receive signal below 0.5V or that the module detects more than 32 consecutive zeros.
RRA (Received Remote Alarm)	Indicates one of the following: • RLOS is on at the remote end. • RSIG or RLOS is on at the local end.
FAIL	Indicates one of the following conditions: • Diagnostic testing is in progress. Diagnostic testing occurs when you cold-start the module. You cold-start the module when you cycle power, issue the **diags** command from the Technician Interface, or hot-swap the link module. This LED blinks three times and turns off when the diagnostic testing terminates successfully. • Power-up diagnostic testing failed and the link module is waiting for an automatic attempt to reinitiate diagnostic testing. If the FAIL LED turns on again, call the Bay Networks Technical Response Center. • A catastrophic failure due to a hardware problem on the link module occurred and the link module is waiting for an automatic attempt to reinitiate diagnostic testing. If the FAIL LED turns on again, call the Bay Networks Technical Response Center.

Multichannel E1 (MCE1) LEDs

This section describes the LEDs on MCE1 link modules. Figure 3-2 shows the LEDs on the Single- and Dual-Port MCE1 link modules. Table 3-2 describes the function of each LED.



EIM0007A



E1M0006A

Figure 3-2. MCE1 LEDs

Table 3-2. Functions of the MCE1 LEDs

LED	Function
LCL ALM (local alarm)	Indicates a Loss of Frame (LOF) or a Loss of Signal (LOS) condition.
RMT ALM (remote alarm)	Indicates the reception of a remote LCL ALM (local alarm).
LOOP	Indicates that the port is in loopback state.
SYNC	Indicates that the port is configured and is synchronized to the E1 network.
FAIL	Indicates one of the following: • Diagnostic testing is in progress. Diagnostic testing occurs when you cold-start the module. You cold-start the module when you cycle power, issue the **diags** command from the Technician Interface, or hot-swap the link module. This LED blinks three times and goes out when the diagnostic testing terminates successfully. • Power-up diagnostic testing failed and the link module is waiting for an automatic attempt to reinitiate diagnostic testing. If the FAIL LED turns on again, call the Bay Networks Technical Response Center. • A link module hardware problem exists and the link module is waiting for an automatic attempt to reinitiate diagnostic testing. If the FAIL LED turns on again, call the Bay Networks Technical Response Center.

Appendix A
Cabling Requirements for the Link Modules

This appendix provides technical information about the cabling requirements for the E1 link modules.

Cabling Requirements (Order Nos. 77007, 77009, AG2111001, and AG2111002)

E1-1 compliance requires the use of an Order No. 7161 cable. Refer to Figure A-1 and Table A-1 for cabling information.

Note: This note applies to Order Nos. 77007 and 77009 only.

The auxiliary clock input is not designed for use with the 120-ohm interface. Also, the requirements in this manual apply when using the 75-ohm interface.

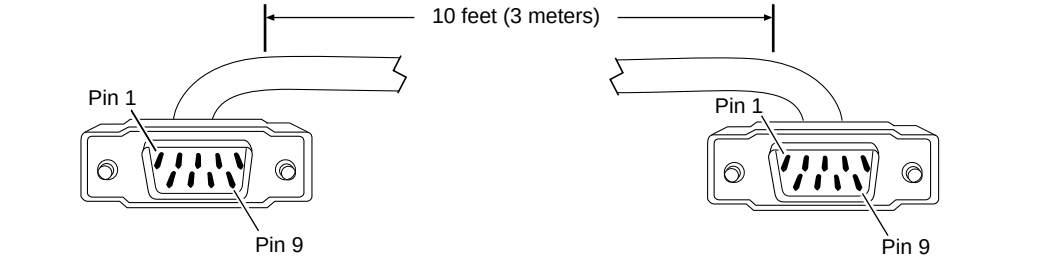


Figure A-1. E1 Cable (Order No. 7161)

Table A-1. E1 Cable (Order No. 7161) Pin Assignments

Bay Networks Termination		**Remote Termination**	
Pin	**Signal**	**Pin**	**Signal**
1	Receive A	1	Receive A
3	Shield	3	Shield
5	Transmit A	5	Transmit A
6	Receive B	6	Receive B
9	Transmit B	9	Transmit B

Cabling Requirements (Order Nos. AG2111001 and AG2111002)

PRI ISDN compliance requires the use of an Order No. AA0018001 cable. Refer to Figure A-2 and Table A-2 for cabling information.

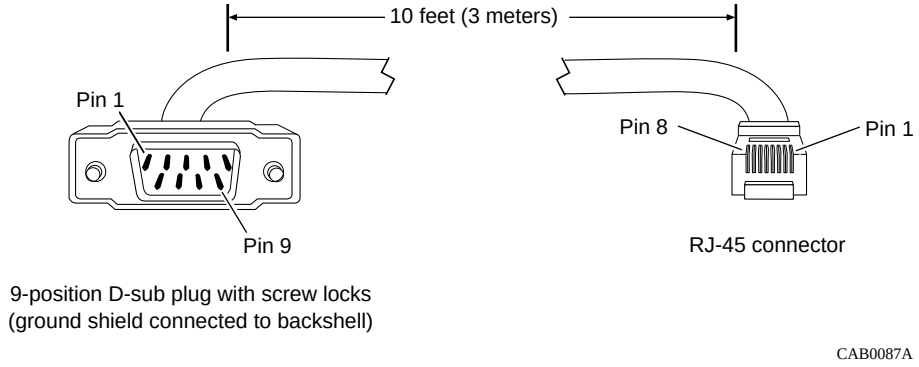


Figure A-2. E1 DB9 to 120Ω PRI ISDN Cable (Order No. AA0018001)

Table A-2. E1 DB9 to 120Ω PRI ISDN Cable (Order No. AA0018001) Pin Assignments

Pair Number	Bay Networks Termination		Remote Termination	
	Pin	Signal	Pin	Signal
1	1	Receive Tip	1	Receive Tip
1	6	Receive Ring	2	Receive Ring
2	5	Transmit Tip	4	Transmit Tip
2	9	Transmit Ring	5	Transmit Ring
	3	Ground	3, 6	Ground

Appendix B
Requirements for European Operation

This appendix provides technical specifications and notes about operating the following link modules in Europe:

- MCE1-1 (Order No. 77009, Part No. 108787)
- MCE1-2 (Order No. 77007, Part No. 108199)
- MCE1-II 75-ohm Single (Order No. AG2111004, Part No. 111378)
- MCE1-II 75-ohm Dual (Order No. AG2111003, Part No. 111022)
- MCE1-II 120-ohm Single (Order No. AG2111002, Part No. 111609)
- MCE1-II 120-ohm Dual (Order No. AG2111001, Part No. 111607)

Installation Requirements

The link modules are approved only for installation in a host, and with host attachments, which are either type approved for such apparatus or, if supplied after March 1, 1989, are marked with or supplied with a statement that the host is supplied under the terms of General Approval No. NS/G/1234/J/100003.

Installation of the link modules in a BLN, BLN-2, or BCN platform will satisfy the conditions stated in this appendix. The BLN, BLN-2, and BCN platform are supplied under the terms of General Approval NS/G/1234/J/100003.

Power Requirements

The link modules are powered from the host chassis and have the power requirements shown in Table B-1.

Table B-1. Link Module Power Requirements

Voltage	Amperage
+5 V	5 A
+12 V	0.75 A
-12 V	0.75 A

The power drawn from the host chassis combined with that required for any other link modules and accessories must be within the power rating of the host chassis.

You must install the link modules so as not to impair the integrity of the network's protection from hazardous voltages used or generated internally by the host chassis.

Clearances and Creepage Distances

You must maintain the clearances and creepage distances (shown as X and Y, respectively, in Table B-2 and Figure B-1) between the link module and

- The host chassis in which it is installed
- Any adjacent link modules installed in the host chassis

The exception to this rule is the edge connector, which is located in the host chassis backplane, where no minimum distance applies.

Table B-2. Link Module Clearances and Creepage Distances

Clearance (X)	Creepage (Y)	Voltage Used or Generated by Other Parts of the Host or Expansion Card
2.0 mm	2.4 (3.8) mm	Up to 50 V rms or V dc
2.6 mm	3.0 (4.8) mm	Up to 125 V rms or V dc
4.0 mm	5.0 (8.0) mm	Up to 250 V rms or V dc
4.0 mm	6.4 (10.0) mm	Up to 300 V rms or V dc

The creepage distances apply to the normal office environment. When the local environment within the host chassis is subject to conductive pollution or dry nonconductive pollution that could become conductive due to condensation, the creepage distances shown in parentheses in Table B-2 will apply.

The clearances and creepage distances between adjacent points should be checked as follows (Figure B-1):

- The clearance distance (X) is the shortest distance between two points measured through the air.
- The creepage distance (Y) is the shortest distance between two points measured across a surface.

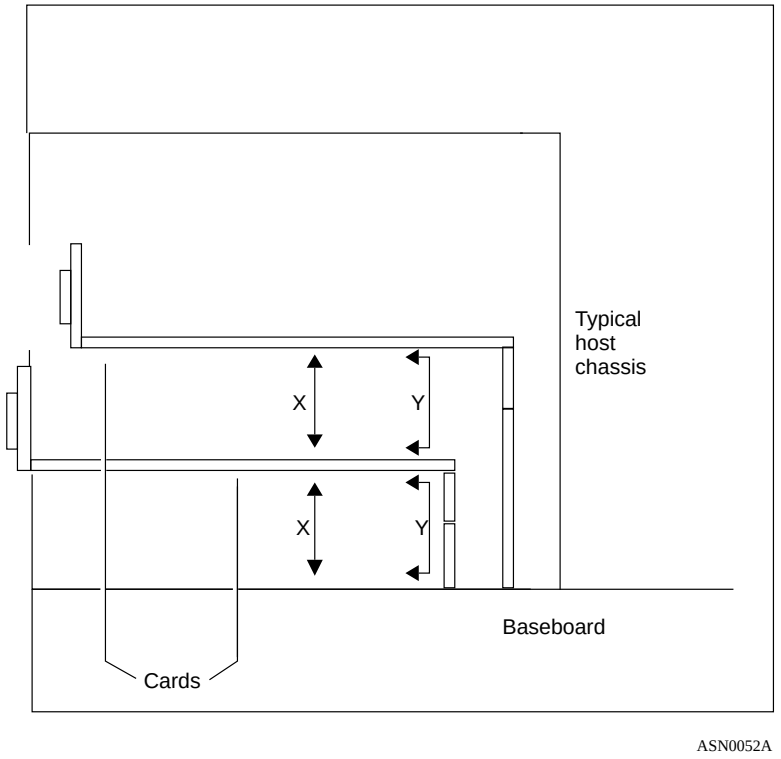


Figure B-1. Link Module Clearances and Creepage Distances

You should obtain advice from a competent telecommunications safety engineer if in doubt.

Failure to install a link module according to these instructions will invalidate the Approval.

European Safety Status

The tables in this section detail the safety status of each product as defined by European Standard EN41003.

Safety Status (Order Nos. 77007 and 77009)

Table B-3 lists the safety status of interconnection points to the connection of other equipment.

Table B-3. Safety Status (Order Nos. 77007 and 77009)

Port Location	Port Description	Type of Circuit
COMM1	E1 120Ω (balanced)	Telecommunications network voltage (TNV)
COMM1 Transmit	E1 75Ω (transmit)	TNV
COMM1 Receive	E1 75Ω (receive)	TNV
COMM2	E1 120Ω (balanced)	TNV
COMM2 Transmit	E1 75Ω (transmit)	TNV
COMM2 Receive	E1 75Ω (receive)	TNV
P1	Host Port	Safety extra-low voltage (SELV)
J1	Host Power	SELV

Safety Status (Order No. AG2111001)

Table B-4 lists the safety status of interconnection points to the connection of other equipment.

Table B-4. Safety Status (Order No. AG2111001)

Port Location	Port Description	Type of Circuit
COMM1	E1 120Ω (balanced)	TNV
COMM2	E1 120Ω (balanced)	TNV
P1	Host Port	SELV
J1	Host Power	SELV

Safety Status (Order No. AG2111002)

Table B-5 lists the safety status of interconnection points to the connection of other equipment.

Table B-5. Safety Status (Order No. AG2111002)

Port Location	Port Description	Type of Circuit
COMM1	E1 120Ω (balanced)	TNV
P1	Host Port	SELV
J1	Host Power	SELV

Safety Status (Order No. AG2111003)

Table B-6 lists the safety status of interconnection points to the connection of other equipment.

Table B-6. Safety Status (Order No. AG2111003)

Port Location	Port Description	Type of Circuit
COMM1 Transmit	E1 75Ω (transmit)	TNV
COMM1 Receive	E1 75Ω (receive)	TNV
COMM2 Transmit	E1 75Ω (transmit)	TNV
COMM2 Receive	E1 75Ω (receive)	TNV
P1	Host Port	SELV
J1	Host Power	SELV

Strap Settings (Order No. AG2111003)

Before installing the 75-ohm Dual-Port MCE1 link module (Order No. AG2111003), refer to Table B-7 to ensure that the strap settings on the link module match your configuration.

Table B-7. AG2111003 MCE1-II 75Ω Dual-Port MCE1 Strap Settings

Option	Setting	Jumper
Transmit Data Ground Reference (COM 1)	Connected	S12
	Not Connected	S12
Receive Data Ground Reference (COM 1)	Connected	S2
	Not Connected	S2
Transmit Data Ground Reference (COM 2)	Connected	S5
	Not Connected	S5
Receive Data Ground Reference (COM 2)	Connected	S6
	Not Connected	S6

Safety Status (Order No. AG2111004)

Table B-8 lists the safety status of interconnection points to the connection of other equipment.

Table B-8. Safety Status (Order No. AG2111004)

Port Location	Port Description	Type of Circuit
COMM1 Transmit	E1 75Ω transmit	TNV
COMM2 Receive	E1 75Ω receive	TNV
P1	Host Port	SELV
J1	Host Power	SELV

Strap Settings (Order No. AG2111004)

Before installing the 75-ohm Single-Port MCE1 link module (Order No. AG2111004), refer to Table B-9 to ensure that the strap settings on the link module match your configuration.

Table B-9. AG2111004 MCE1-II 75Ω Single-Port MCE1 Strap Settings

Option	Setting	Jumper
Transmit Data Ground Reference (COM 1)	Connected	S12
	Not Connected	S12
Receive Data Ground Reference (COM 1)	Connected	S2
	Not Connected	S2